REMARKS

New independent Claims 28-30 are substituted for the claims previously under consideration. Claims 3, 5, 11, 13-17, 22-25, and 28-30 remain, with Claims 3, 5, 11, 13-17, and 22-25 withdrawn from further consideration.

The rejection of certain claims under 35 U.S.C. § 112, second paragraph, as being indefinite is noted. Those claims no longer remain. Furthermore, with respect to the "desired value (W)", new Claims 28-30 refer to a --predetermined value--.

The rejection of Claim 12 as indefinite likewise is considered moot as that claim no longer remains in the application. New Claim 30 is drafted to recite --or in response to the signal (S)-- so as to avoid the basis for that rejection.

The new claims are submitted as complying with the second paragraph of 35 U.S.C. § 112.

At paragraph 3 (a) the Examiner states that specification fails to describe a value (W) or how it is considered as a desired value. As pointed out at page 7, second paragraph, the predetermined desired value W may advantageously be extremely small. Using the incremental encoder for determining the path dependent signal S, which is compared with the desired value W to form the deviation signal ΔS, the desired value W thus, can be incrementally small. That value W is designed into the control circuit but can also be changed according to specific user wishes, especially when the circuit is part of a programmable controller. Essentially, the value W (relating to a path) is sufficient for forming the deviation ΔS to indicate an initial movement or displacement of the load bearing element and, accordingly, the load 9.

The claims previously under consideration were rejected as anticipated by newly-cited *Joraku* (US 3,841,605). The Applicant respectfully traverses that rejection as possibly applied to the system recited in new Claims 28-30.

Claim 28

Joraku discloses a moving apparatus having force control and speed control. The force control stores the weight of a load and maintains the generation of a desired force needed to lift that load, and the speed control maintains the speed for moving the load at a predesignated value (see column 1, lines 54-60).

The lift control system according to the present invention, in contrast with *Joraku*, includes a device (11) for generating a signal (S) that contains information corresponding to a path covered during the beginning of a substantially vertical (Z-Z) movement of a load-bearing element. An elementary difference between the present invention and the apparatus of *Joraku* consists, accordingly, in the fact that accordingly to the present invention the load is first balanced and then moved in the balanced state, while *Joraku* describes first a moving of the load and then —"when a load is in a suspended or lifted position"— a "balancing" whereby the load cannot be moved because its "appointed speed is zero". *Joraku* describes his process as follows:

> "When a load is in a suspended or lifted position, its appointed speed is zero, and the load is stopped at that position. In this condition, the force control means stores the weight of the load and generates a force necessary for suspending or lifting a load" (column 1, lines 61-64).

Expanding on that general statement, *Joraku* says at column 3, lines 33-43;

> "Referring to FIG. 3, when a contactor 303 is switched on, an output corresponding to a designated speed from a speed designating circuit 301 is compared with feed back information from a speed detector 311 at a summing point 302 and is applied to an operational amplifier 304. An output from the operational amplifier 304 and an output from a current detector 307 are applied to each input terminal of an operational amplifier 305. A current converter 306 controls the current supplied to a motor 316 in response to the output from the operational amplifier 305".

Joraku's speed control means consists of the speed designating circuit 301 (Fig. 4) the so-called speed detector 311 (actually a generator 407), the summing point 302 and the operational amplifier 304, which supplies output power to the motor for moving the load, upwardly or downwardly, assuming frictional forces are negligible. Since the speed of the motor is fed back through the speed detector 311, the motor speed is kept at a designated value by operation of the speed control means. Please note that the variable resistor 403 (Fig. 4) controls the motor speed (i.e., lifting speed) according to *Joraku* (column 4, lines 43-45). In other words, lifting speed according to that reference is a preset or dialed-in value constituting a command signal (column 4, lines 31-32)

compared with the instantaneous voltage from the generator 407 to regulate that present motor speed.

When *Joraku's* apparatus lifts a load to a desired position, the motor 506 is stopped by returning the slidable terminal of the variable resistor 403 to zero speed level in order to stop the load at the lifted position (column 6, lines 21-24). At that time, switches S_2 and S_3 are actuated, energizing other circuitry so that the motor generates a force equal to the weight of the load (column 6, lines 33-35).

Summarizing apparatus according to *Joraku*;

1. The load is moved whereby the speed of the load is measured by the speed detector 311
2. The load is stopped. To do this
   (a) the contactor 303 manually has to be switched on,
   (b) the variable resistor 403 of the speed designating circuit 301, which is a part of the speed control means, manually has to be set on the appointed speed "zero", so that the load cannot be further moved
3. By means of the force control means, the weight of the load is sensed and compensated by a force generated by the motor 506 and equal to the weight of the load
4. The contactor 303 has to be manually switched off for allowing the load to be moved.

Accordingly to the present invention;

1. The load bearing element (5) with the load (9) is in the rest position.
2. Torque of the drive (2) is automatically increased until a substantially vertical (Z-Z) movement of the load bearing element out of the rest position begins. To do this, the device (11) for generating the signal (S) provides that signal in response to the vertical movement out of the rest position.
3. In response to a zero deviation (ΔS) of the signal (S) from a desired value of the path-dependent signal, the drive (2) is constant-

switched. Thereby, the load is allowed to be moved without manually switching a contactor or manually setting an appointed value.

The foregoing comparison shows that the present control mechanism for balancing a load according to the invention is easier to operate, and is correspondingly safer, than that of *Joraku*. In particular, manual switching operations are not necessary according to the present invention.

For the foregoing reasons, the Applicant submits that the system is defined in new Claim 28 is not anticipated by *Joraku*.

Claim 29

New Claim 29, although independent, is based on new Claim 28. Additionally, Claim 29 contains the features formerly in Claim 8, namely, that the device for generating the signal (S) is an incremental encoder arranged coaxially with a drum or with a drive shaft of the drive (2) for the lifting apparatus, and that the signal (S) corresponds to an angle of rotation of the drum or the drive shaft. No such apparatus appears in *Joraku*, who measures the value of current drawn by the lifting motor 316 as a feedback value to the summing point 302 of a motor control (column 3, lines 47-50). Accordingly, new Claim 29 is novel over *Joraku*.

New Claim 30

The subject matter of Claim 30 is restricted in scope, relative to Claims 28 and 29. This claim contains first the features of former Claim 1, namely, the balancing regulating circuit comprised by closed loop 11-12-13-2-11 shown in Fig. 3; secondly, the features of former Claim 10, namely, the movement control or open loop 10-15-14-13-2-11; and thirdly, the feature of former Claim 12, namely, the setting member which includes possible closed loops 16-14-13-16 and 16-14-13-2-11-16.

The advantage and function of the "setting member" is described on page 8, second paragraph, and page 9, first paragraph, of the original description.

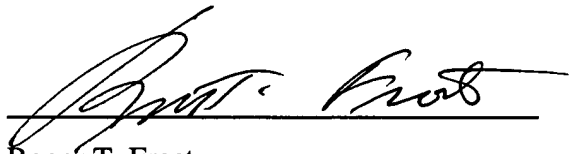
Even if a combination of *Joraku* and *Kazerooni* (US 5,865,426), as suggested by the Examiner's rejection in Claim 9 of the previous Office Action, would lead to a combination of a "balancing circuit" and "movement control" in one system, that

hypothetical system does not suggest or teach the additional feedback interactions as in loops 16-14-13-16 and 16-14-13-2-11-16. Absent those teachings, the Applicant respectfully submits that the system according to Claim 30 would not have been obvious over *Joraku* in view of *Kazerooni* at the time of making the present invention.

The foregoing is submitted as a complete response to the Office Action identified above. The Applicant submits that the present application is in condition for allowance and requests a notice to that effect.

Respectfully submitted,

MERCHANT & GOULD



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Roger T. Frost
Reg. No. 22,176

Merchant & Gould, LLC
P.O. Box 2903
Minneapolis, MN 55402-0903
Telephone: 404.954.5100